DOCUMENT RESUME

ED 175 474 IR 007 648

TITLE Demonstration of Multilibrary Services through BALLOTS Network: Final Report of the BALLOTS Center to the California State Library on Contract Activities from October 1, 1974 to June 30, 1978.
INSTITUTION Stanford Univ., Calif. BALLOTS Center.
SPONS AGENCY California State Library, Sacramento.
PUB DATE Aug 78
CONTRACT 5756
NOTE 21p.; For related documents, see IR 007 640 and ED 156 106
AVAILABLE FROM The Research Libraries Group, Inc., Stanford, California 94305 ($1.00, prepaid)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Cataloging; *Information Services; *Information Systems; Library Acquisition; *Library Automation; *Library Networks; Library Technical Processes; *Shared Services
IDENTIFIERS *BALLOTS

ABSTRACT

This narrative report relates the activities of the Bibliographic Automation of Large Library Operations using a Time-sharing System (BALLOTS) program at Stanford University for the original contract period and extensions, during which time the original single-user system was transformed into an automated network of libraries across the country. These libraries share their online processing and cataloging activities, accessing the system in either of two communications modes. The impact of the California State Library contract on BALLOTS is discussed, and reactions to BALLOTS from some public libraries are included. (CMH)

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FINAL REPORT
OF THE BALLOTS CENTER
TO THE CALIFORNIA STATE LIBRARY
ON CONTRACT ACTIVITIES
FROM OCTOBER 1, 1974 TO JUNE 30, 1978

August 1978 (Printed February 1979)

STANFORD UNIVERSITY

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CALIFORNIA STATE LIBRARY

LSCA FINAL REPORT

TRANSMITTAL MEMO

MEMO TO: The California State Library
Federal and State Programs Office
Post Office Box 2037
Sacramento, California 95809

FROM: Stanford University

DATE: August 31, 1978

SUBJECT: Final Report for LSCA Project "Demonstration of Multilibrary Services through a BALLOTS Network"
Contract ID Number 5756

Attached is the final report on work done under contract 5756, from October 1, 1974 through June 30, 1978. This report covers the original contract period, which ended on June 30, 1976, plus a funded contract extension period, from June 1, 1976 through June 30, 1977, plus two further, no-cost extension periods, from July 1, 1977 through December 31, 1977, and from January 1, 1978 through June 30, 1978.

Edward E. Shaw

Edward E. Shaw, Interim Director, BALLOTS Center
Associate Provost, Stanford University

IR007648

CALIFORNIA STATE LIBRARY

LSCA FINAL REPORT

PROJECT NAME: Demonstration of Multilibrary Services through a BALLOTS Network

PROJECT GRANTEE: BALLOTS Center

AGENCY ASSOCIATED WITH PROJECT: Stanford University

PROGRESS REPORT NUMBER: 14 (final follow-up report to 13 quarterly reports submitted between February 21, 1975 and February 10, 1978)

PERIOD COVERED: October 1, 1974 - December 31, 1977

CONTRACT ID NUMBER: 5756

PERSONS PREPARING REPORT: Narrative - Jennifer Hartzell, 415/497-0657; Financial Summary Statement - Cheryl Hulett, 415/497-0448

DATE SUBMITTED: August 31, 1978

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REPORT ON CONTRACT EXPECTATIONS AND ACHIEVEMENTS

A. Initial Contract Period, October 1, 1974 - June 30, 1976

In October 1974, work began at Stanford University under California State Library contract 5756 to implement the project "Demonstration of Multilibrary Services through a BALLOTS Network". Following submission of the Stanford BALLOTS proposal to the State Library, some modifications in the project were made and agreed to by Stanford and the State Library. Quoting from the first progress report submitted to the State Library under this contract, after these modifications had been determined (the project modifications were formally presented in an addendum to the proposal on April 28, 1975, and approved on June 4, 1975),

> "Stanford University proposed to extend the BALLOTS II system capabilities (for a description of BALLOTS II, see proposal submitted on September 27, 1974) [or the final report on BALLOTS II submitted to the National Endowment for the Humanities in October 1975] in two basic directions:
>
> (1) to develop a network capability so that libraries could use video or typewriter terminals in line-by-line mode (a) to search BALLOTS files through multiple access points; (b) to modify records on-line to suit local requirements; (c) to create new records; and (d) to receive printed outputs suited to local processing requirements; and
>
> (2) to develop a generalized support system for records in the MARC II communications format.
>
> "During the contract period, the BALLOTS network system will be used, primarily for cataloging support, by seven public libraries: Orange County, Los Angeles Public, Los Angeles County, San Francisco Public, Marin County, Santa Clara County, and Sutter County. During this period, five of the libraries will receive their cataloging records in machine- readable form. These are: Los Angeles Public, Los Angeles County, Santa Clara County, Marin County, and Orange County. San Francisco Public Library's cataloging will be tranmitted in machine-readable form to the University of California University-wide Library Automation Program's BibCenter (located at Berkeley), where card sets will be published [i.e., catalog cards would be produced] for San Francisco Public. Sutter County Library will use the network for searching only, but will put the terminal in a public area in order to assess patron reaction to the automated capabilities."

The resulting cataloging support network, called "PLAN" (Public Library Automation Network), was to be pilot tested in the participating libraries for one year.

The variety of tasks necessary to fulfill the contract were broken down in the progress reports under five headings:

I.A. Typewriter Terminal Network System Analysis Tasks;

I.B. MARC II - ISBD Video Display Terminal Network System Analysis Tasks;

II.A. Typewriter Terminal Network System Programming Tasks;

II.B. MARC II - ISBD Video Display Terminal Network System Programming Tasks; and

III. Management Tasks.

The initial BALLOTS network system was designed as three on-line interactive functions, INQUIRY, SEARCH, and NETWORK. A library using the INQUIRY function could search the BALLOTS files. A library using the SEARCH function could search the BALLOTS files and set up standing searches, which the system would reiterate against the files periodically, and for which the library would receive notification when a result was found or the search was finally purged (on expiration of a period of months specified by the library). A library using the NETWORK function could modify records found in the files or create new ones in order to produce catalog records for output on magnetic tape, in addition to searching the BALLOTS files and establishing standing search requests. Initially, none of the records modified or created would be saved on-line. They would be saved on magnetic tape for later inclusion in the on-line files.) All of this would be done in line-by-line mode (one line of data transmitted to and from the computer at a time; usually at thirty characters per second).

The second major system expansion specified in the proposal--to develop generalized support for record storage and processing in the complete MARC II communications format and compatibility with the International Standard Bibliographic Description format--was included in the design of the three network system functions; it was also added to the BALLOTS II full-face system used in Stanford University Libraries. (This expansion was implemented in both the line-by-line network system and the Stanford full-face system simultaneously, following several months' operation of the line-by-line system.)

Following the pattern established in developing and implementing the services that made up BALLOTS II, BALLOTS library systems analysts produced a "PLAN System Book" of

specifications for the appearance of the on-line network system to the user and for the nature of the outputs to be provided. Programming staff worked from this System Book in writing and testing the actual program code.

In order to make the system accessible in line-by-line mode on terminals not specially programmed for BALLOTS use, a number of new system display and input formats and system commands were created, suited to altering the information displayed on a screen one line at a time. The changes necessary for the system to identify a line-by-line user and provide the proper formats and command processing were installed.

Four output tape formats were programmed so that the records produced on magnetic tape for PLAN libraries would interface with local computer systems or commercial vendors' processing. For Marin County, Los Angeles Public, and Los Angeles County, the MARC II communications format was implemented; for Santa Clara County, a format was provided that could be used by their own county data processing system to continue producing their book catalog; for Orange County, another tailored format was created.

During the first quarter of 1975, a review of the "California State Library Pilot Network Communications Study" produced by BALLOTS staff resulted in the decision to adopt the TYMNET communications network to connect the PLAN library terminals with the Stanford computer.

Investigations made during the first and second quarters of 1975 led to the selection of the Zentec 9002B video terminal with a Qume printer for use by the PLAN libraries.

The Zentec terminals were delivered to the PLAN libraries the first week of June 1975, and library staff were trained to use the searching capabilities of the network system the following weeks. PLAN library staff were trained to do on-line cataloging in August.

As installation and operation of the three network functions was completed during the summer of 1975, project staff were also completing the analysis and performing the programming necessary to implement support for the full MARC format and ISBD compatibility in both the Stanford full-face and the PLAN line-by-line systems. In December 1975, the PLAN System Book was merged with the "BALLOTS II System Book" in the process of completing the specifications for the "Full MARC - ISBD Module", so that the variations in the two modes of system use were recorded in one place.

Progress in this second major task was retarded by the concentration of staff efforts on the necessary conversion of the entire BALLOTS system and all developmental programming to a new IBM 370/168 computer installed by the Stanford Center for

Information Processing. This conversion was accomplished by the end of January 1976.

In the fall of 1975, the BALLOTS management also began formulating and drafting the necessary organizational and financial methodology for embarking on network operations and further development--the logical corollary to successful pilot operation of PLAN. Such activity has required increasing and steady contributions of time and manpower since that time.

In April 1976, the user's manual to the line-by-line network system--A Guide to BALLOTS Network Services--was published. This manual was intended initially to aid the PLAN libraries, who had in fact been working from clean drafts of the Guide since June 1975; it was written in a style that would enable other, non-PLAN network users to refer to it without difficulty. A combined full-face and line-by-line edition of the BALLOTS Data Elements Notebook was also published.

Following a successful conversion to the new SCIP computer, staff efforts to complete and install the Full MARC - ISBD Module and train PLAN and Stanford Libraries staff resumed. This module was installed on May 24, 1976.

Meanwhile, the task to produce catalog cards for San Francisco Public Library by sending tapes of their records created through BALLOTS to ULAP's BibCenter, had been modified. At the end of June 1976, ULAP was to cease producing catalog cards through its BIBCARD program for the University of California, Berkeley, and University of California, San Diego libraries. Therefore, when BALLOTS converted to the 370/168 computer, ULAP programmers transferred BIBCARD programs to this computer, and performed work on the Stanford machine in preparation to turn the entire BIBCARD program over to Stanford and BALLOTS. This unscheduled transfer of responsibility for the program, and the modifications that the program required to produce user-formatted catalog cards from BALLOTS on-line processing, held up operation of the BALLOTS network catalog card program until late August 1976.

Thus, production of catalog cards for SFPL, one of the goals of the first CSL-Stanford/BALLOTS contract, was not achieved within the thirteen-month period of the contract but was accomplished within the next three months.

As for distribution to other PLAN libraries of their records on machine-readable tapes, Los Angeles Public Library began receiving tapes in the fall of 1975; Marin, Santa Clara, and Los Angeles County libraries began receiving them in December 1975. At this point, Orange County was sent a test tape for evaluation. Orange County's evaluation was done over several months and resulted in a number of modifications to their tape format. At the end of the initial contract period, June 30, 1976, Orange was

still testing tapes received, and a new book catalog vendor was testing Los Angeles County's tapes for input to its system. The other three libraries were continuing to receive tapes on a regular schedule.

B. Funded Contract Extension Period, June 1, 1976 - June 30, 1977

As the initial contract period drew to a close, representatives of the California State Library, the PLAN libraries, and the BALLOTS Center discussed continuing network operations and expanded services. Stanford University submitted a proposal to the State Library for a thirteen-month extension to the contract, overlapping the original period by one month. This extension was to be funded from some monies remaining from the original amount granted, plus additional new monies. On the basis of discussions held and signed statements from the PLAN library directors expressing their commitment to continued use of BALLOTS, Center staff initiated some of the proposed new development in June 1976. The extension proposal was approved in the next quarter, and operation and development of PLAN continued without interruption.

According to the abstract of the approved extension proposal,

> "The extension has three goals: (1) to increase support of technical processing in the PLAN libraries by expanding the BALLOTS system to include shared cataloging; (2) to increase the utility of the BALLOTS system to the PLAN libraries through greater exchange of information and through systems analysis; and (3) to evaluate the benefits and costs to the PLAN libraries of using the BALLOTS system.
>
> "1. Shared cataloging. Each title cataloged by the PLAN member libraries through BALLOTS, including the cataloging done under the original contract, will be retained in BALLOTS' on-line data base and indexed.... BALLOTS will add to its MARC File records for [monograph] titles that were excluded from 1972 to 1975.
>
> "2. Training, meetings, and systems analysis. Regularly scheduled meetings will be held at each of the PLAN libraries, involving staff at all levels from all the member libraries. Having trained the PLAN libraries in new uses of the system, BALLOTS staff will make four half-day visits to each library during the year. On request from a library, a BALLOTS library systems analyst will study its use of BALLOTS and recommend changes to help integrate the system with the library's normal processing flow. BALLOTS staff will

also study and recommend appropriate and most economical computer terminal and printer equipment and a communications method for each library, taking into account each library's special needs.

"3. Cost benefit analysis. Each PLAN library will perform a detailed cost benefit analysis of BALLOTS' utility to that library, and BALLOTS staff will provide data about computer costs; this study will be coordinated by a consultant hired for this purpose, who will work with the State Library, PLAN libraries, and BALLOTS on the design, methodology, and reporting of the cost analysis, and who will prepare a final report together with the State Library and BALLOTS staff."

In the first progress report done in the extension period, these goals were broken down into a series of "objectives", each to be reported on every quarter. The first two objectives were completed in the first quarter of the extension period. One of these was an analysis and documentation task carried over from the initial contract that was fulfilled by related work done to implement the network system. The second objective was to implement catalog card production for San Francisco Public Library, which was done at the beginning of September 1976; SFPL has received cards through BALLOTS steadily since that time.

In the next quarter, the BALLOTS system was altered to provide "shared cataloging". (The service was put into operation on November 1, 1976). This enabled the PLAN libraries as well as other users cataloging through BALLOTS to add their cataloging records to the on-line Catalog Data File, formerly limited to Stanford's Main Library and Meyer Undergraduate Library. Shared cataloging users could store their cataloging on-line, carry out necessary maintenance of these records on-line (such as indicating the relocation of a book from one branch to another), and produce catalog cards or records on tape from this on-line data. ALL BALLOTS users--those who only searched the data base as well as those doing cataloging--could now view the records of all contributors to the data base, and draw on this information in their own technical processing and interlibrary loan arrangements.

In the same quarter (October-December 1976), a study was begun of PLAN terminal and printer options. In particular, the benefits of converting the PLAN libraries to the BALLOTS-programmed video terminal, to be used in full-face mode, was considered. (In full-face mode, a 24-line screen full of data is sent between the computer and the terminal at each transmission, rather than one line; the speed of transmission is 120 characters per second, rather than the 30 usually associated with line-by-line mode. The ability to use BALLOTS in full-face mode, formerly restricted to Stanford Main and Meyer Undergraduate

libraries, had been expanded to other users at the same time as shared cataloging.)

A financial review was made of the communications cost to each PLAN library in a related study of the most economical and efficient means of communication for each member.

The cost benefit analysis was begun by Mr. Tom Shoemaker, hired specifically for this study. Consulting with Mr. Shoemaker was Mr. Brett Butler of Butler Associates, Los Altos. The study was conducted along the lines of the "Houston Cost Analysis Model", identifying tasks of narrow functions so that tasks common to a variety of libraries could be compared.

By spring 1977, the cataloging done by San Francisco Public, Marin County, and Santa Clara County before shared cataloging had been implemented, and preserved on magnetic tape, had all been converted and added to the on-line Catalog Data File. Work had begun to acquire the MARC monograph records missing from the BALLOTS MARC File from 1972 to 1975. (These consisted of a gap where no records from May through August 1972 had been added to the file, and a number of categories that fall outside the scope of Stanford collections, such as juvenile titles.)

In March 1977, library systems analysis at the member library's request was first done, for Marin County Free Library. A BALLOTS staff member also completed a day of discussion at Los Angeles Public Library about possible applications of BALLOTS to L. A. Public's technical processing.

The PLAN terminal and printer options study and the communications alternatives study resulted in the recommendation that SFPL, Marin County, and Santa Clara County convert to BALLOTS-programmed video terminals with printer attachments, to be used in full-face mode. In order to do this, these libraries would go from the TYMNET communications network to leased lines. This combination of steps would maximize the libraries' efficiency and reduce costs at the same time. This recommendation was extended to Los Angeles County and Los Angeles Public libraries as well. A 120-character-per-second DECprinter I printer was chosen to provide output at each of these sites. In addition, a Trendwriter Model 300 hardcopy terminal was selected for use by Sutter County Library, a PLAN member that uses the BALLOTS search-only service. Since it was determined that the contract funds allocated to the PLAN members' operational costs could also cover the cost of acquiring these terminals, the State Library agreed to the purchase of the terminals out of contract funding.

Meanwhile, the meetings of BALLOTS Center staff and PLAN libraries administrators and staff were being held periodically. The first meeting was held at the Marin County Library in September 1976; the second at the Los Angeles Airport Sheraton

Hotel in December 1976; the third at the San Francisco Public Library in February 1977; and the fourth at the Los Angeles Public Library in May 1977. After this fourth meeting, PLAN members agreed that these meetings were no longer required, since each user had established its needs for and uses of BALLOTS, and had little need to trade concerns and information with the others. In addition, regular BALLOTS Users Meetings had begun to take place, generally near the BALLOTS Center at Stanford, to which PLAN members and any other BALLOTS users (of which there were an increasing number) could come. The final PLAN users meeting was therefore held in December 1977 at the San Francisco Hilton Hotel, during the California Library Association conference, in order to present the finished cost benefit analysis and the printed report on this study.

In order to complete the installation of the new BALLOTS-programmed terminals in the PLAN libraries, to complete the cost benefit analysis and report, and to finish adding the missing records to the BALLOTS MARC File, in June 1977 Stanford requested a six-month no-cost extension to the contract. The new terminal, which supports the entry and display of the complete MARC character set, including diacritics and special characters, and has a printer support option, was not ready for delivery until August 1977. The cost study, which had progressed steadily but had been started late (because the consultant who performed the study had not been hired at the very beginning of the extension contract), was targeted for completion in October 1977. On June 30, 1977, this no-cost extension was approved.

Thus, at the end of the funded extension contract, in June 1977, the status of the three goals set was as follows:

1. Shared cataloging had been implemented and in operation for eight months; the PLAN libraries' cataloging through BALLOTS done between August 1975 and November 1976 had been added to the on-line data base; the MARC monograph records from 1972 to 1975 that had been missing from the BALLOTS MARC File were in hand and the programs prepared that would add them to the on-line data base; actual addition of these records had not yet been done.

2. The training necessary to enable PLAN libraries staff to use the shared cataloging, plus refresher training as requested, had been performed; systems analysis for PLAN members as requested had been performed; and four meetings in various locations between BALLOTS Center staff and PLAN member representatives had been held; but additional training would be required when five of the libraries converted to full-face BALLOTS on the new terminal.

3. Each library had organized and summarized its cost data for the identified tasks; the data for the cost benefit study had been collected and had undergone some analysis using SPSS (Statistical Package for the Social Sciences) on the Stanford

computer; an outline for the final report had been prepared and reviewed; portions of the final report had been drafted; but further analysis of the data and completion of the report were required.

C. First No-cost Extension Period, July 1 - December 31, 1977

This period of BALLOTS Center development and operation under the contract was primarily one of routine continuation of services to the by now experienced PLAN users and completion of the outstanding tasks listed above. Funds remaining from the contract extension of June 1976 through June 1977 paid for this activity. By the end of August 1977, the BALLOTS MARC File had been made complete for MARC records in the BOOKS format from 1972 to the present; this conversion of records formerly missing or stored incomplete in the file enlarged the on-line file by some 45,000 records, or 7 percent.

The new leased lines and terminal hardware had been installed in the PLAN libraries, and staff retrained to use the system in full-face mode. This was done in enough time for most PLAN members to have had two to four months' experience with this new mode before the end of the contract period.

The PLAN cost benefit study report was written, the section dealing with each member reviewed by that library, and the final report published in November 1977. Its title is Public Library Automation Network: Cost/Benefit Analysis of the Impact of BALLOTS on Library Technical Processing: Final Report. This report was presented at the final PLAN users meeting in San Francisco on December 14, 1977, by Tom Shoemaker and Judith Yarborough, Manager of BALLOTS Library User Services. Copies of the report are available from the BALLOTS Center.

D. Second No-cost Extension Period, January 1 - June 30, 1978

The period from January to June 1978 was primarily one of consolidation of earlier projects. The final production and distribution of the PLAN cost benefit study took place early in the year. Additional work was done on the catalog card profile for Los Angeles Public Library, to correct some problems and alter the profile where it had been found necessary. In May and June, BALLOTS Center Communications staff reconfigured the lines linking users in the north San Francisco Bay area and users in the Los Angeles area. The number of "links" (connection points) in the communication chain was thereby reduced, improving the system's reliability. At this time a piece of hardware in the chain (the multidrop box) was removed from its former location on the campus of the University of California, Los Angeles, and installed in Stanford University's Flower Street office.

V. Impact of Contract Activity on Participants, January 1978

In preparing this final report, the BALLOTS Center sent a letter to the directors of all the PLAN libraries in January 1978. After attempting to summarize the current status of each PLAN member at the end of the contract extension period, this letter asked:

> "Will you assist in the composition of this [the final] report by sending [us] a brief statement of the impact you feel BALLOTS use has had on your institution? The perception of each PLAN member of the impact of this involvement is far more valuable and helpful to the State Library in evaluating the project than any statement of [the BALLOTS Center] could be."

PLAN members responded generously, writing and telephoning the Center to share their reactions. The following are their comments, occasionally paraphrased. (Please note that the PLAN members responded in early January. During the final no-cost extension period, Janury through June 1978, a number of changes and adjustments were made to improve the interface between PLAN libraries and the system--in particular, to the catalog card profile developed for Los Angeles Public Library.)

Los Angeles County Public Library

"The use of BALLOTS has provided us with quick and easy access to MARC and Stanford's bibliographic data files for cataloging and verifying author and titles for acquisitions and interlibrary loan. Through the use of the on-line printer, we were provided with hard copy for use by catalogers to catalog a greater quantity of titles more quickly, thus enabling us to get the books to the community libraries more quickly.

"We are looking forward to continued use of BALLOTS. Our plans are to use it in much the same way we did during the PLAN Project. We also hope to complete implementation of a system to permit us to enter original cataloging through BALLOTS into our automated catalog production system. BALLOTS will also be used in our work on the Ethnic Services Task Force Catalog Project."

-- Carol E. Moss, County Librarian

Los Angeles Public Library

"The impact of BALLOTS on the Los Angeles Public Library could be reported on several projects. Our first contract called for us to input limited information (such as call number, Title Identification Number, level, category, full main entry, title, price, two subject headings, etc.) which was captured on magnetic

tapes that BALLOTS mailed to us. We then mailed these tapes to our Data Service Bureau, where our Book History Record was updated and our output (pressure-sensitive labels and book check cards) was created from the BALLOTS tapes. We found the mailing time plus the time it took to fill one reel of tape a disadvantage. This phase was discontinued in September 1975. [Contributing to LAPL's decision to halt this activity was the acquisition in spring 1975 of a Video 370 cathode ray tube terminal that connected the catalog department directly with the library's Data Service Bureau.]

"We then used BALLOTS primarily for searching by L. C. card number, and found the searching capability of BALLOTS superior in time taken to our Cardset searching capability, although the BALLOTS data base was somewhat limited.

"From July 1 to December 8, 1977, we did not use BALLOTS at all.

"After a new training session on December 9, 1977, we began our present project of inputting 3,000 titles and receiving catalog card sets from them through BALLOTS. For this phase [these comments were received in January 1978] it is too soon for us to report or evaluate the true impact of BALLOTS on LAPL. Since our commitment in this project [the Ethnic Services Task Force Catalog Project] limits us to essentially original cataloging, we have taken at least five weeks just to become familiar with the BALLOTS-programmed Zentec 9003 terminal and the diacritics and special characters on this new terminal. As of January 13, 1978, we had found MARC copy for only fifty out of 1,343 [Spanish-language] titles cataloged.

"We see the advantages of BALLOTS as:

1. Speed in producing and alphabetizing catalog cards. (We presently receive a weekly shipment of cards.)

2. Alphabetized State Library cards that are sent directly to the State Library.

3. Correct presorting of the cards for filing.

"At present, we see as disadvantages:

1. The time needed to match copy cards with the master copy in order to locate (a) which titles must be re-input (i.e., no matching copy cards were received), and (b) which cards must be replaced by work in BALLOTS' MAINTENANCE function (because of terminal user errors and the like).

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2. The time spent in the MAINTENANCE function to correct our on-line Catalog Data File.

-- Ruby Hori, Principal Librarian, Catalog Department

Marin County Public Library

"At the beginning of the PLAN project, Marin County Library was in a state of flux with its catalog. We were 85-90 percent finished with the conversion from a manual card system to a computer-produced microform catalog. This catalog was and is maintained and produced by a commercial vendor. The major problems we had encountered with the automated catalog were adding new records to the file and making changes to the existing file. We were using a jerry-rigged interim system with the long-range goal of accessing a large bibliographic data base and extracting the records with the proper modifications in machine-readable form. So the advent of BALLOTS-PLAN appeared to be the perfect solution to our cataloging problems.

"There were problems and vexations with the start-up and transition period. However, in retrospect, they were normal and expected and all in all, BALLOTS fit into the Marin processing system with remarkable ease. If there were any faults, they were as much on our side for expecting the moon today when it could only be delivered tomorrow or next week. We had very high expectations and still do.

"In the long run, BALLOTS-PLAN accomplished a lot of good things for the Marin County Library and as the PLAN cost benefit study showed, at essentially the same dollar cost. Some of those things are:

1. Decreased the lag time from time of receipt of the title until it appeared in the catalog from months to weeks.

2. Evened out the flow of work, which allowed for a better and tighter schedule of production of the catalog.

3. Speeded up the throughput of books in the processing department.

4. Reduced the number of errors in the catalog.

5. Reduced the number of titles we needed to do original cataloging on.

6. Reduced the amount of time the professional cataloger spends per title.

7. Provided a simple way to get original cataloging into the catalog.

8. Simplified the correction procedure.

9. Simplified verification for interlibrary loan.

"All of the above provides a better product faster for the patrons."

-- Bruce D. Bajema, County Librarian

Orange County Public Library

[Orange County Public Library withdrew from PLAN in November 1976. It was found that although a tape of Orange's records in output format suitable for input to their own book catalog system could be successfully produced, the number of alterations required in their program to interface it successfully with BALLOTS were too great to prompt continued use of BALLOTS.

A representative of Orange, in a telephone conversation in January 1978, suggested that one purpose behind this library's joining PLAN had been to demonstrate the interfacing of a highly generalized system (BALLOTS) and a highly specialized one (Orange's own system, BIBLIOS, developed over the past ten years). He felt that this interface had been successful in a technical sense, but that given the existence of the prior in-house tailored system, and the uncertain prospect for future funding (he instanced the Jarvis-Gann amendment then being sought as an expected limitation on library funding), the Orange County library administration was realistic in its decision not to attempt to continue using two systems but to continue with its own.]

San Francisco Public Library

"The impact of BALLOTS on San Francisco Public Library operations has been great, in that it has changed the cataloging operations almost completely. Changes have been made to many procedures, some necessitated by the operations of BALLOTS, others from analyzing the regular operations when planning for BALLOTS. By managing to reduce the typing needs drastically and having the catalog cards delivered already in filing order, the library has been able to shift personnel to other tasks that were backlogged. By streamlining the cataloging procedures, cataloging is now ahead of the processing line and staff can be shifted to help that area.

"Prior to BALLOTS use, the SFPL branches received less than complete catalog sets; for some titles (mysteries, westerns),

only a unit card was produced. The branches have found, post-BALLOTS, that having complete catalog card sets has enabled them to aid the public much more efficiently and made the catalog less confusing.

"BALLOTS has also made the library more 'forward looking' in that innovative planning is now being done based on the possibilities that BALLOTS can provide. An automated circulation system is now being planned, and the machine-readable file of titles [SFPL's BALLOTS Catalog Data File] may be of great help in the conversion process. A computer output microform catalog is envisioned as a possibility in the near future, since we now have a start in this direction because of BALLOTS.

"The library's use of BALLOTS has been remarked on by city budget analysts as a positive step, one that they are pleased to see the library take, representing both efficient use of resources and improved service to patrons."

-- James Reilly, Systems Librarian

Santa Clara County Free Library

"We feel BALLOTS has definitely had a positive impact on Santa Clara County Library operations. With BALLOTS, we are processing more new titles with less staff (that is, not that staff have been let go but that existing staff can achieve more; one cataloger did, in fact, retire who was not replaced). The quality of our cataloging has improved, owing to more MARC copy being used from the BALLOTS MARC File and to efforts to standardize cataloging along the lines followed by other BALLOTS users. Even juvenile titles cataloging is more complete. We feel that processing through BALLOTS takes the same or less time than our pre-BALLOTS processing (it is not always faster). Since we began using BALLOTS, the staff have become much more open to change, and this altered attitude is considered a 'system benefit' of our experience with BALLOTS."

-- Kathy Bales, Program Librarian, Cataloging

Sutter County Free Library

"Certainly I believe that the Public Library Automation Network was most worthwhile to Sutter County Library. It allowed us to bring into the library the first of what are expected to be numerous technological changes. It gave the staff an opportunity to become totally familiar with this area of technology and thus allay any fears of technology that we may have had.

"Certainly the majority of our cataloging information is now provided by BALLOTS. It makes it possible to standardize our

cataloging and our subject headings. This is the most direct impact of BALLOTS at Sutter County Library."

-- Sara Carter Swinney, County Librarian

The BALLOTS Center, Stanford University

The impact of the CSL PLAN contract activity on BALLOTS has been profound. In sum, it provided the means for turning the system from a single-user system, limited to a single physical site, to a true automated network of libraries, sharing their on-line processing and cataloging activity.

At the completion of grant activity on the BALLOTS II system, Stanford had achieved a complete technical processing system, operating on specially programmed video terminals at a single campus, supporting essentially two large libraries--the Stanford Main (now Cecil H. Green) Library and the J. Henry Meyer Memorial Undergraduate Library. The initial contract from the California State Library enabled the creators of BALLOTS II, within one year, to make the system and its data base of L. C. MARC and Stanford records accessible to users throughout the the country, on any of a wide number of teletype-like video and hard-copy terminals.

The contract funded enhancements to the system that permitted BALLOTS to accept, process, and output records in the full MARC II communications format. The first magnetic tapes of users' records produced by BALLOTS went to book catalog and computer output microform vendors to the PLAN libraries. This was the origin of a successful interaction with such agencies that BALLOTS has maintained and expanded.

The CSL contract provided the resources for generalized documentation of the system, used first by the PLAN libraries and later by a variety of user institutions in their on-line searching and cataloging. The activity demanded by the contract prompted the recognition that a newsletter to those interested in BALLOTS was necessary, to provide additional information about system uses and to inform the readership of new developments and activities. (The BALLOTS Newsletter has grown since its first issue in October 1974 from a circulation of less than a thousand to over 2,000 and growing.)

The contract enabled BALLOTS to adapt and support a generalized catalog card program, as an alternative or a complement to magnetic tape production.

Finally, the CSL PLAN contract extension provided for the expansion of the system to permit a true, shared cataloging network. Fulfilling a primary goal of the earliest BALLOTS planning, this shared cataloging network permits users to store

complete, unique cataloging of their holdings on-line, where it can be kept up-to-date for on-line reference, replacement card generation, and added copy cataloging--a partial list of the uses of such data bases. This network permits its users to build their cataloging on the records stored by themselves and others--to share their work in the most basic sense. At the same time, it keeps each user's own on-line cataloging inviolate, protected from alteration by any one except the owning library.

The contract also provided for a cost-benefit study of the effect of this automation program on the participants. Thx study report contains in-depth descriptions of how BALLOTS services are used by four of the PLAN libraries and a wealth of measurement data and analysis methodology. It thus constitutes a major record of BALLOTS operational usage for future reference.

This spectrum of services achieved under the contract had another kind of impact on BALLOTS. The BALLOTS-PLAN activities fostered increased recognition of and participation in BALLOTS' achievements and goals by others in the library community. The creation of the "BALLOTS Center," a formal program of Stanford University, owed much to the California State Library's part in the system's development and operation.

The contract from the California State Libraries, awarded to a project entitled "Demonstration of Multilibrary Services through a BALLOTS Network", in the end achieved just that. By funding the network's creation and supporting the first libraries to demonstrate its value in their daily operations, it assisted the BALLOTS system across a watershed in any library automation program.